

WHAT IS CLAIMED IS:

1. In a method for moving charged particles through a medium in a movement  
area comprising a trench of capillary dimensions using an electrical field with  
5 spaced apart electrodes to produce said field, the improvement comprising:  
supporting said medium with an organic polymer substrate having a  
substantially uncharged surface.
2. A method according to Claim 1, wherein said organic polymer is  
10 polymethylmethacrylate, polycarbonate, polyethylene terephthalate or polystyrene  
and said organic polymer is optionally supported on glass.
3. A method according to Claim 2, wherein said charged particles are  
separated during said moving into a plurality of components.  
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4. A method according to Claim 1, wherein said charged particles are  
separated during said moving into a plurality of components.
5. A method according to Claim 1, wherein said medium is a polymer gel.  
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6. In a method for moving charged particles through a medium in a movement  
area comprising a trench of capillary dimensions using an electrical field with  
spaced apart electrodes to produce said field, the improvement comprising:  
supporting said medium with a polymethylmethacrylate card.  
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7. A method according to Claim 6, wherein said capillary dimensions are an  
inner diameter of from 25 to 100 $\mu$ .
8. A method according to Claim 6, wherein said electrical field is created by a  
30 plurality of electrodes at opposite ends of said trench and along said trench.
9. A device for moving charged particles through a medium employing an  
electrical field, said device comprising:

an organic polymer solid substrate having an upper surface, wherein said upper surface of said organic polymer is substantially uncharged;

a main trench of capillary dimensions in said substrate having opposite ends;

5 a pair of electrodes, with one electrode proximal to one end of said trench and the other electrode proximal to the other end of said trench;

means for connecting said electrodes to a source of electricity; and

means for introducing and removing liquid from said trench.

10 10. A device according to Claim 9 wherein said organic polymer is polymethylmethacrylate, polycarbonate, polyethylene terephthalate or polystyrene and said organic polymer is optionally supported on glass.

11. A device according to Claim 10, wherein said capillary dimensions are a  
15 diameter of from 25 to 100 $\mu$ .

12. A device for moving charged particles through a medium employing an electrical field, said device comprising:

an organic polymer solid substrate having an upper surface, wherein said  
20 upper surface of said organic polymer is substantially uncharged;

a main trench in said substrate extending downward from said upper surface, having opposite ends, said trench having a depth of about 5 to 25 $\mu$  and extending across said substrate ;

a pair of electrodes, with one electrode proximal to one end of said trench  
25 and the other electrode proximal to the other end of said trench;

means for connecting said electrodes to a source of electricity; and

ports for liquid transfer proximal to each end of said trench for liquid transport or a reservoir at each end of said trench.

30 13. A device according to Claim 12, wherein said organic polymer substrate is polymethylmethacrylate.

14. A device according to Claim 12, wherein said trench includes a gel for gel electrophoresis.
15. A device according to Claim 12, further comprising:
- 5 at least one lateral branch trench crossing said main trench; and at least one additional pair of electrodes, each additional pair proximal to opposite ends of each of said lateral branch trenches; and
- means for connecting each of said additional pairs of electrodes to a source of electricity.
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16. A device according to Claim 15, further comprising:
- an electronic computer for controlling the electricity delivered to each of said electrodes connected to said electrode connecting means.
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17. A device for moving charged particles through a medium employing an electrical field, said device comprising:
- a polymethylmethacrylate card having an upper surface, wherein said upper surface of said substrate is substantially uncharged;
- a main trench in said substrate extending downward from said upper
- 20 surface, having opposite ends, said trench having capillary dimensions and extending across said substrate;
- a pair of electrodes, with one electrode proximal to one end of said trench and the other electrode proximal to the other end of said trench;
- at least one lateral branch trench crossing said main trench; and at least
- 25 one additional pair of electrodes, each additional pair proximal to opposite ends of each of said lateral branch trenches;
- means for connecting said electrodes to a source of electricity; and
- ports for liquid transfer proximal to each end of said trench and each said lateral branch for liquid transport or a reservoir proximal to each end of said
- 30 trench and each said lateral branch..
18. A device according to Claim 17, said device further comprising:

an electronic computer for controlling the electricity delivered to each of said electrodes connected to said electrode connecting means.

19. A device according to Claim 17, wherein said main trench contains a gel  
5 electrophoresis medium.

20. A device according to Claim 19, wherein said gel electrophoresis medium is polyacrylamide.

10 21. In a capillary electrophoresis device comprising a capillary and electrodes proximal to opposite ends of said capillary, the improvement which comprises:  
a capillary of polymethylmethacrylate.